

NOZZLE MAINTENANCE

How nozzle maintenance can eliminate quality problems, spray liquid waste, and high operating costs:

There's a multitude of factors involved in selecting the best nozzle for your application. And, just like other production equipment, nozzles require maintenance: regular inspection, cleaning and even replacement in order to preserve final production quality and to maintain production processes on a cost-efficient basis.

How often should you inspect spray nozzles?

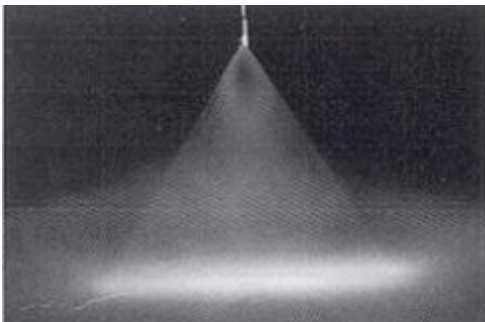
The type and frequency of your maintenance schedule depends on your particular application. In some operations, nozzles are still spraying usefully after thousands of hours of operation; in others, however, nozzles require daily attention. Most nozzle applications fall between these extremes.

At the very least, you should visually check for damage during every preventive maintenance shutdown. Additional maintenance scheduling depends on application specifications, the liquid used, and nozzle material.

Common Causes of Spray Nozzle Problems:

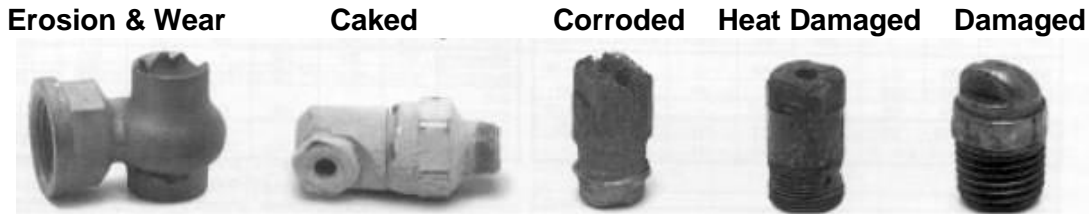
What should you look for during inspection? The answer depends on your particular spraying applications. Sometimes it's wear from a high-pressure process or caking from spraying a highly viscous liquid. The seven most common causes include:

Spray from a clean nozzle



Distorted spray from damaged or clogged nozzle





Erosion and Wear: The gradual removal of material from the surfaces of the nozzle orifice and internal flow passages causes them to become larger and/or distorted, which can affect flow, pressure and spray pattern.

Corrosion: The chemical action of sprayed material or the environment causes corrosion breakdown of nozzle material.

Clogging: Unwanted dirt or other contaminants blocking the inside of the orifice can restrict the flow and disturb spray pattern uniformity.

Caking: Overspraying, misting, or chemical buildup of material on the inside or outer edges of the orifice from evaporation of liquid can leave a layer of dried solids and obstruct the orifice or internal flow passages.

Temperature Damage: Heat may have an adverse effect on nozzle material not intended for high temperature applications.

Improper Reassembly: Misaligned gaskets, over tightening, or other repositioning problems can result in leakage as well as poor spray performance.

Accidental Damage: Scratching through the use of improper tools during installation or cleaning can cause inadvertent harm to an orifice.

How to check spray nozzle performance:

Depending on their importance for your particular application, you should check these five factors on a regular basis:

Product quality/application results: Quality control inspection could reveal products defects caused by poor spraying performance such as uneven coating, streaking or structural imperfections from improper product cooling. Application specific measurements can also help you evaluate spraying performance; for example, check the dust content of the air for dust suppression and check the relative humidity for humidity control.

Flow rate: The eye cannot detect increased flow, so the flow rate of each nozzle should be checked periodically by reading the flow meter or collecting spray in a container and the results compared to specifications or to the performance of new nozzles.

Spray pressure: Pressure in the nozzle manifold can be checked using a properly calibrated pressure gauge.

Spray pattern: In many instances you can visually check for pattern uniformity. Changes caused by orifice damage, clogging or caking are usually noticeable. However, to detect gradual orifice wear you may need special measuring equipment.

Nozzle alignment: To provide uniform coverage, nozzle should be oriented correctly in relation to one another so that all patterns are parallel.